

Remarks

Diethelm

The examiner has rejected claims 1 - 3, 5, 8 - 10, and 12 -21 as anticipated by Diethelm (U.S. patent no. 5,270,131). However, Diethelm does not anticipate the present invention because Diethelm's "contact elements" are "*fixed* on the electrode layer . . . so as to be non-detachable, e.g. by soldering." Diethelm 4: 12 -14 (emphasis added).

In contrast, the claims of the present invention, as amended, only cover fuel cell assemblies in which the compliant contact members *press* against the adjacent membrane electrode assembly. *See also* Specification, p.8, line 5 (" an array of individual springs 68, 78 is attached to each BSP, and each spring makes intimate contact with the MEA attached to the adjacent BSP") and Fig. 6. While Diethelm 's contacts are fixably attached to both the bipolar separator plate (BSP) and the membrane electrode assembly (MEA), the claims of the present invention cover fuel cells that are fixably attached to the BSP and press or push against the MEA.

This is a critical distinction -- Diethelm's fuel cell are not modular, because the MEA of one cell is soldered to the BSP of its neighboring cell. In the present invention, in contrast, the fuel cells can be modular, because they are not fixably attached to each other. The cells of the present invention can therefore be independently removed, repaired or replaced, unlike Diethelm's cells. Therefore, Diethelm lacks a critical element of the present invention and is no obstacle to patentability.

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Nolscher

The examiner has also rejected claims 1, 2, 8, 9, 12, 14-16, and 18 -21 as anticipated by WO 97/27638 to Nolscher.

At the outset, the applicant notes that the cited Nolscher reference is written in German, and that no translation is provided. Only the abstract is in English, and the abstract does not provide any discussion on the supposed electrical contact element. Therefore, this reference is incapable of supporting any 102(b) rejection. *Ex Parte Gavin*, 62 U.S.P.Q.2d 1680, 1683 - 84 (B.P.A.I. 2001) (vacating rejection based on abstract only, where underlying document was in Japanese). The applicant therefore submits that the examiner has not made a *prima facie* case for anticipation based on this reference.

Additionally, even if the counterpart English-language patent (U.S. patent no. 6,080,502) is consulted, there is still no disclosure supporting the examiner's finding of anticipation. The examiner concludes that element 20 of Fig. 2 in the Nolscher patent is an independently-acting compliant electrical contract, but the patent provides no basis for this conclusion.

First, nothing in Nolscher suggests that element 20 is compliant or flexible. The examiner states that all materials have some flexibility, which may be theoretically true, but in ordinary usage certain materials and parts are described as "flexible" or "compliant" while others are described as "rigid." For purposes of the present invention, the specification sheds light on the meaning of "compliant" when it states

that "compliant electrical contacts":

refers to a spring-like or other flexible adjusting electrical contact that creates the contact loads and pressures of an operating fuel cell and maintains substantially constant electrical contact.

Specification, page 6, lines 6 -9.

Since there is no suggestion that Nolscher's "elements" are designed for maintaining "substantially constant electrical contact" between a MEA and a BSP, there is no basis for concluding that Nolscher's "element" 20 is "compliant" in the sense of the present patent.

Second, Nolscher does not show or suggest that the elements 20 are "independently-acting," unlike each of the claims of this application. Nolscher is silent on this point, and there is no basis to infer from the patent's silence that the "elements" flex independently of each other, even assuming they flex at all.

Third, Nolscher does not state or suggest that these elements conduct electricity, unlike the claims of the present invention, which are limited to electrical contacts. For all we know, Nolscher's vague "element" could be a non-conductive spacer.

Fourth, as to claims 8, 9, 10, there is no showing in Nolscher that the element extends the length and/or width of the MEA. *See* office action ¶ 18. Figure 2 of Nolscher only shows a length or width (not both), and it only shows a portion of whatever dimension is depicted. The examiner states that it would have been obvious to extend the

elements the entire length and width in order to maximize electrical contact, but this argument assumes that the element is designed as an electrical contact point, which has not been established. For instance, if the element is just a rigid, non-conductive spacer, there may be no reason to provide such spacers over the entire length and width of the MEA or BSP.

Thus, since Nolscher does not teach independently-acting compliant electrical contacts, it does not anticipate the present invention. *See Scripps Clinic & Research Found. v. Genentech Inc.*, 18 U.S.P.Q.2d 1001, 1010 (Fed. Cir. 1991) ("anticipation requires that all of the elements and limitations of the claim are found within a single prior art reference").

103 Rejections Based on Shape of Spring

The examiner has also rejected claims 3 - 7, 13, 17, 4, 6, 7 as obvious in light of the above-cited references and Chan (U.S. patent no. 6,224,396) and Walker (U.S. patent no. 5,299,939). *See* paragraphs ¶¶ 15, 16, 19, and 20.

However, each of these claims contains the limitation described above, namely the requirement of independently-acting compliant electrical contacts, and neither Chan nor Walker teach or suggest the use of such contacts in a fuel cell.

Indeed, neither Chan nor Walker have anything to do with fuel cells. Chan is directed to "connectors for adhering a semiconductor chip to a supporting substrate," (col. 1: 13 - 14), and Walker is directed to a "spring array connector" for "interconnecting

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components and circuit boards" (col. 1: 8 -9). These patents simply do not teach or suggest the use of compliant contacts or springs to maintain continuous electrical contact between the BSP and the MEA of a fuel cell. And since neither Nolscher nor Diethelm teach the use of independently-acting compliant electrical contacts, the prior art simply does not render any of the claims of the present invention obvious.

Objections to Drawings and Specification

The examiner made certain non-art objections and rejections to the drawings, specification, and claims. See ¶¶ 7 - 10 of office action. The applicant has now made corrections in response to each of these objections or rejections. More particularly, the applicant has (i) amended the specification to clarify that reference characters 46b and 56b refer to the manifold seal and adhesives, (ii) amended drawing 5C to correctly refer to the edge seal as 54 rather 51B, (iii) amended the specification to indicate that the parent application is now abandoned, and (iv) amended claim 4 so that it is now dependent on claim 3.

Conclusion

The prior art simply does not show or suggest independently-acting electrical contacts that press against a MEA, and therefore the claims of the present application should be allowed.

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